

Answer on Question #42820 – Math - Algebra

What are the zeroes of the polynomial $3x^3 - 2x^2 - 7x - 2$?

Solution

$$P(x) = 3x^3 - 2x^2 - 7x - 2.$$

Possible Zeros: $\pm 1, \pm 2, \pm \frac{1}{3}, \pm \frac{2}{3}$.

We start by trying -1 in synthetic division. Remember that -1 is a zero if the remainder is zero.

-1	3	-2	-7	-2
		-3	5	2
	3	-5	-2	0

Therefore, $x = -1$ is our first zero. Since the quotient resulting from synthetic division is always one degree less, the quotient that we have is the quadratic $3x^2 - 5x - 2$ which can easily be factored.

$$3x^2 - 5x - 2 = 0$$

$$(3x + 1)(x - 2) = 0$$

Setting each factor equal to zero, we get

$$(3x + 1) = 0 \rightarrow x = -\frac{1}{3}$$

$$(x - 2) = 0 \rightarrow x = 2$$

Answer: $-1; -\frac{1}{3}; 2$.